



**State & Federal Contractors
Water Agency**

1121 L Street, Suite 1045, Sacramento, CA 95814

March 11, 2010

Phillip Isenberg, Chairman
Delta Stewardship Council
980 Ninth Street, Suite 1500
Sacramento, CA 95814

RE: Defining and Measuring Water Supply Reliability

Dear Chairman Isenberg and Council Members:

The Delta Stewardship Council (Council) has been requested by others to define "water supply reliability" as central to the formation of the Delta Plan. While further definition of the term in the context of the Delta Plan is attractive in the abstract, we believe it is neither useful nor practical in the context of the requirements for the Delta Plan. We believe it more useful for the Council to focus on how it can promote a more reliable water supply, consistent with its legal mandate. The legislature provided specific guidance on what it means to promote a more reliable water supply for the state in Water Code sections 85302 (d)(1)-(3)

- (1) Meeting the needs for reasonable and beneficial uses of water.
- (2) Sustaining the economic vitality of the state.
- (3) Improving water quality to protect human health and the environment.

Thus the charge to the Council is to promote improvement in water supply reliability. It should not get sidetracked into an unproductive exercise in redefining what reliability means, which is well established as we explain, below.

Water Supply Reliability Defined

There are two general categories of water supply reliability: system reliability and supply reliability. **System reliability** refers to the physical availability and resiliency of storage, conveyance, and treatment systems that deliver water and, in general, the period of time an outage resulting from mechanical failure or unexpected events would be considered acceptable or manageable, taking into account repair time and the availability of system redundancy. **Supply reliability** is a measure of the percentage of time full water demands/needs are met. Although system reliability is a key factor in determining supply reliability, it is fundamentally the expected availability of water to meet demands, including imported supplies where applicable, that is at issue in the Delta Plan.

Directors

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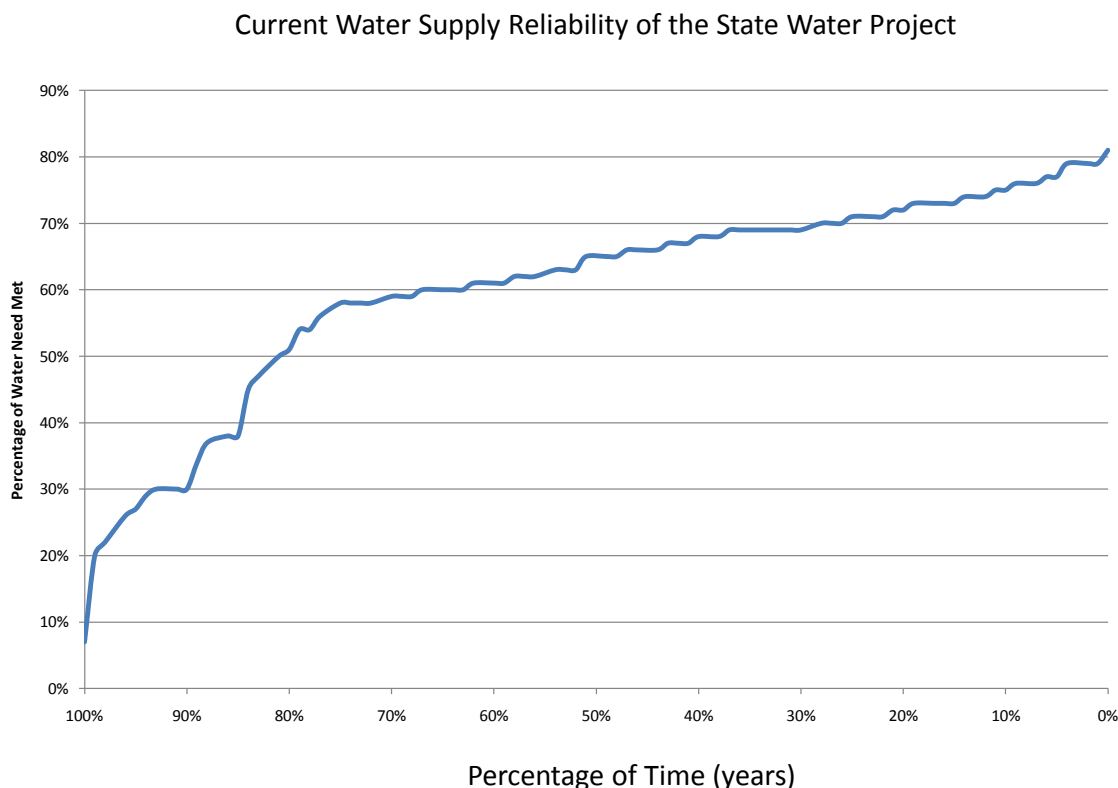
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Water supply reliability is commonly measured in a frequency curve. The frequency percentage defines the amount of full service demands capable of being met, as shown below in an example graph of the current reliability for the State Water Project (SWP).



For example, this graph shows that the SWP, with its current infrastructure deficiencies and regulatory constraints cannot meet full service contract demands in accordance with SWP water service contracts. Indeed, it can only meet about 60% of the needs for which it was originally designed, and for which State Contractors nonetheless pay for, in about 65% all years. Areas above the line in this graph are percentage and frequency of unmet needs, areas below, met needs. This graph also shows that in ten percent of years the SWP can only meet about 30% of needs. Ultimately, the actual level of reliability at the local level will be the combination of the reliability of a portfolio of water supplies, as discussed further, below. The Delta Plan should seek to move this curve, and the curves of other systems dependent on the Delta “up”, improving the sufficiency and reliability of these supplies, leaving the shape of the ultimate reliability curves at the retail level to those agencies responsible for delivering water at the local level. What happens to these curves as a result of the Delta Plan can be a litmus test on the Plan’s success with respect to its water supply reliability goals.

Addressing Delta conveyance will make the transmission of water currently available in the system more reliable and provide opportunities for additional voluntary water transfers now constrained due to a lack of reliable conveyance. Investments enhancing storage capability, water conservation, and alternative resource development can also enhance the overall availability and reliability of supplies,

allowing for improvement in reliability curves at the local level and lessen the amount of unmet water demand statewide. In promoting these activities, the Delta Plan can succeed in making the state's water supply "more reliable".

Until the last few decades, the planning and engineering assumptions in virtually all California water systems were for 100% supply reliability, notwithstanding system outage issues. Due to regulatory actions, cost of marginal supplies, and the difficulty maintaining funding levels through rates necessary to maintain systems at the same high level of resiliency as in the past, this level of reliability has been greatly compromised, especially for customers of the SWP and the federal Central Valley Project (CVP). This has forced reanalysis of reliability goals at the local level.

Reliability goals are appropriately set at the local and regional delivery entity level. Ultimately, since ratepayers pay for the water service, those ratepayers have the ultimate say through their elected and appointed officials what they expect in terms of service and what they are willing to pay for. This varies by geography and the ever-changing makeup of community water use, availability of alternative supplies, socio-economic factors, and ability to pay. For example, an agricultural area at high elevation and a short growing season, able to grow only pasture/alfalfa, may not desire nor be able to afford a high degree of water supply reliability. Such an area may prefer to recognize that in some years cropland may have to be fallowed because the cost or feasibility of enhancing their supply reliability for extreme hydrologic or regulatory circumstance may not be justified by the economic return. Conversely, an agricultural area that has high percentages of permanent and higher value tree and vine crops or urban areas which have already invested heavily in water conservation measures and "hardened" supply needs, likely will want to provide a highly reliable supply, as the economic impact of probable water shortage outweighs the cost of providing that highly reliable supply. These economic value decisions can only be made at the user-end or local level to capture all the costs of providing a given level of reliability. For these reasons, it would be inappropriate and counterproductive for the state to set any specific statewide goal for water supply reliability. One statewide standard cannot possibly address each local water resource situation.

Finally, it is important to understand that at the local level the total water supply reliability of a water delivery entity is typically made up of a combination of water sources each with their own individual reliability curves blended into a total resource portfolio with a blended reliability level. For agencies that receive SWP and CVP water, or that divert water upstream of the Delta to supplement local supplies, the reliability of such imported supplies also affects the overall reliability of other local supplies because these supplies are often used conjunctively. For example, groundwater supplies that are replenished with imported water rely on the availability of that imported water in sufficient amounts at sufficient frequency to maintain a level of safe yield in the basin(s). Recycling programs in Southern California rely on sufficient supplies of lower salinity imported SWP water to ensure recycled water projects can meet local salinity limits set by regional water quality control boards while remaining economically and environmentally feasible. Managing and integrating a total portfolio of water supplies, each with their own water supply reliability and quality parameters, toward an overall reliability goal is what these agencies do. Given the diversity of supplies, situations, and circumstances of water resource planning at the local level, a statewide standard is not useful, practical, or productive. The Council should focus on measures, as articulated in section 85020 of the Delta Reform Act, that can improve the "vector" of reliability toward increased sufficiency and reliability, overall.

We urge the Council to follow the clear direction of the Delta Reform Act (Section 85302 (d)) to *promote a more reliable* water supply, but not to become sidetracked in a futile effort to define a single state-wide standard of “water supply reliability”, or to endeavor to provide multiple “definitions” depending on the use or location or water supply portfolio of any particular agency.

Sincerely,

A handwritten signature in black ink, appearing to read "Byron Buck", with a long, sweeping horizontal line extending to the right.

Byron M. Buck
Executive Director